



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/830,690	04/30/2001	Michael Leong	13648NP	9887

33000 7590 12/17/2003

DOCKET CLERK
P.O. DRAWER 800889
DALLAS, TX 75380

EXAMINER

BRINEY III, WALTER F

ART UNIT	PAPER NUMBER
----------	--------------

2644

DATE MAILED: 12/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/830,690

Applicant(s)

LEONG ET AL.

Examiner

Walter F Briney III

Art Unit

2644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 April 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-28 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Novas (US Patent 5,023,906).

Claim 1 is limited to **an apparatus for performing cadence detection on a signal**. Novas discloses a call progress monitor that detects tones and patterns of a signal, Novas discloses an **input for receiving an input signal** (figure 1, element 13 and column 4, lines 51-64) **potentially manifesting a certain cadence** (column 3). Novas discloses a call progress monitor (i.e. **signal processing functional block**) (figure 1, element 10) connected to the T1 Interface (i.e. **coupled to said input for receiving the input signal**) that generates (i.e. **said signal processing functional block being operative to successively compute**) a measure of fit (i.e. **confidence level values**) for every analyzed epoch (i.e. **over time during a processing period**) (figure 6 and column 18, line 49-column 19, line 11). Novas discloses a measure of fit (i.e. **a currently computed confidence level value**) representing how closely (i.e. **indicative of a likelihood of existence**) an input signal's pattern (i.e. **cadence**) matches a known signal pattern (i.e. **certain cadence**) over a measured epoch (i.e. **since a beginning of said processing period**) (column 18, line 49-column 19, line

11). Novas discloses a call progress monitor that operates over a time period (i.e. **said processing period**) that can vary in length (i.e. **being characterized by a variable duration**) (column 20, line 33-column 21). Novas discloses generating a measure of fit, which is used to determine if a pattern is matched, therefore, an output must exist to output the measure of fit (i.e. **said signal processing functional block including an output for generating an output signal indicative of the confidence level value at the end of said processing period**) (column 18, line 49-column 19, line 11).

Therefore, Novas anticipates all limitations of the claim.

Claim 2 is limited in part to **an apparatus as defined in claim 1**, as covered by Novas. Novas discloses a call progress monitor (i.e. **signal processing functional block**) terminating call progress detection (i.e. **selectively terminate the processing period**) when a weird busy signal is detected by the complex pattern matcher (i.e. **on the basis of the currently computed confidence level value**) (column 20, lines 49-58 and figure 9b, elements 96 and 98). Therefore, Novas anticipates all limitations of the claim.

Claim 3 is limited in part to **an apparatus as defined in claim 1**, as covered by Novas. Novas discloses a call progress monitor (i.e. **signal processing functional block**) that terminates a processing period when a signal is detected (i.e. **terminate said processing period**) (column 21, lines 12-24). Novas further discloses a signal is detected when the measure of fit (i.e. **computed confidence level value**) is above a threshold **when the currently computed confidence level value reaches a certain**

threshold) (column 19, lines 1-4). Therefore, Novas anticipates all limitations of the claim.

Claim 4 is limited in part to **an apparatus as defined in claim 1**, as covered by Novas. Novas discloses a call progress monitor (i.e. **signal processing functional block**) that terminates (i.e. **operative to terminate**) a call progress detection procedure (i.e. **said processing period**) when enough time has passed to exceed a timeout period (i.e. **exceeds a certain value**) (column 20, line 33-column 21, line 27). Therefore, Novas anticipates all limitations of the claim.

Claim 5 is limited in part to **an apparatus as defined in claim 4**, as covered by Novas. Novas discloses a call progress monitor (i.e. **signal processing functional block**) that detects something is wrong with a phone call and terminates the current operation (i.e. **is operative to terminate said processing period**) when the complex pattern matcher detects a weird busy signal with a high measure of fit (i.e. **when the currently computed confidence level value**) (figure 9b, elements 96 and 98 and column 20, line 50-column 21, line 27) and before the call progress monitor has timed out (i.e. **and an amount of time remaining in the processing period before reaching said certain value indicate that the certain cadence is unlikely to be detected before reaching said certain value**) (figure 7 and column 21, lines 28-61). Therefore, Novas anticipates all limitations of the claim.

Claims 6-10 are essentially the same as claims 1-5, respectively, and are rejected for the same reasons.

Claim 11 is essentially the same as claim 7 and is rejected for the same reasons.

Claims 12 and 13 are essentially the same as claims 8 and 9, respectively, and are rejected for the same reasons.

Claims 14-16 are essentially the same as claims 11-13, respectively, and are rejected for the same reasons.

Claim 17 is limited to **a tone detection apparatus suitable for detection of call progress tones**. Novas discloses a call progress monitor (i.e. **tone detection apparatus suitable for detecting call progress tones**). Novas discloses detecting call progress tones that have a frequency (i.e. **a call progress tone being characterized by at least one frequency component**) and pattern (i.e. **and a timing behavior defining a certain cadence**) (column 1, line 55-column 3). Novas discloses **an input for receiving an input signal** (figure 1, element 13 and column 4, lines 51-64) that contains call progress situations (i.e. **potentially containing a call progress tone**) (column 4, lines 51-64). Novas discloses epochs of input signals that represent sections of a call progress signal (i.e. **the signal being capable of being divided in a plurality of consecutive sections**) (column 3). Novas discloses a digital filter bank (i.e. **a spectral processing unit**) (figure 2, element 12 and figure 3) that performs spectral power estimation (i.e. **for processing said signal**) and outputs a normalized tone power vector (i.e. **a plurality of sets of data elements**) (figure 2 and figure 3 and column 8, lines 12-17). Novas discloses providing power estimates (i.e. **the sets of data elements providing spectral information**) for different frequency sub-bands (i.e. **about respective sections of the input signal**) of the input signal (column 8, lines 12-26). Novas discloses a signal recognition unit (i.e. **a frequency component**

processing unit) (figure 2, element 26) connected to the output of the digital filter bank (i.e. **coupled to said spectral processing unit)** (figure 2, element 12), which processes the power estimates (i.e. **receiving and processing sets of data elements**) to detect and output the call progress signal (i.e. **to output sets of classification data elements**) that the input best matches (i.e. **indicating whether a frequency component of a certain call progress tone exists in respective sections of the input signal**) (column 10, lines 9-27). Novas discloses a situation recognition unit (i.e. **a cadence processing unit**) (figure 2, element 32) that receives the signal recognition unit output (i.e. **coupled to said frequency component processing unit**) (figure 2, element 26) and determines the pattern of a call progress tone based on the signal recognition unit output (i.e. **receiving and processing sets of classification data elements**) (column 12, lines 41-47). Novas discloses calculating for each epoch (i.e. **to compute over time**) a measure of fit (i.e. **successive confidence level values**) for an input signal over the length of a customer irregularity pattern (i.e. **for the input signal during a processing period encompassing the sections of the input signal that correspond to the sets of classification data elements processed by the cadence processing unit**) (figure 6 and column 18, line 49-column 19, line 11). Novas discloses a measure of fit (i.e. **a currently computed confidence level value**) representing how closely (i.e. **indicative of a likelihood of existence**) an input signal's pattern (i.e. **cadence**) matches a known signal pattern (i.e. **certain cadence**) over a measured epoch (i.e. **since a beginning of said processing period**). Novas discloses a call progress monitor that operates over a time period (i.e. **said processing period**) that

can vary in length (i.e. **being characterized by a variable duration**) (column 20, line 33-column 21). Novas discloses generating a measure of fit, which is used to determine if a pattern is matched, therefore, an output must exist to output the measure of fit (i.e. **said signal processing functional block including an output for generating an output signal indicative of the confidence level value at the end of said processing period**) (column 18, line 49-column 19, line 11). Therefore, Novas anticipates all limitations of the claim.

Claims 18-21 are essentially the same as claims 2-5, respectively, and are rejected for the same reasons.

Claims 22-26 are essentially the same as claims 17-21, respectively, and are rejected for the same reasons.

Claim 27 is limited in part to **the apparatus of claim 1**, as covered by Novas. Novas discloses using the call progress monitor (i.e. **a tone detection system**) in a T1 digital telephone system (i.e. **for use in a telecommunication network**) (column 4, lines 65-66). Therefore, Novas anticipates all limitations of the claim.

Claim 28 is essentially the same as claim 17 and is rejected for the same reasons.

Claim 31 is essentially the same as claim 28 and is rejected for the same reasons.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 29, 30, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Novas in view of Lai (US Patent 5,479,501).

Claim 29 is limited in part to **an apparatus as defined in claim 28**, as covered by Novas. Novas discloses all the above limitations and thus all limitations of the claim with the exception of **a non-linear filtration unit**. Lai teaches a majority voting filtered frame decision block (i.e. **non-linear filtration unit**) (figure 1, element 45) that receives an output from a frame decision block (i.e. **an input for receiving successive classification elements**) (figure 1, element 35) and filters the decision blocks output to produce a signal to a cadence detector (i.e. **said non-linear filtration unit being operative to process said successive classification elements in order to produce a result signal**) (column 5, lines 31-62 and figure 1), the signal representing the majority of the outputs from the frame decision block (i.e. **said result signal containing substantially less variation than said successive classification elements**) (column 5, lines 31-62). Lai's filter improves noise immunity in a telephone status signal detection unit (i.e. Novas' call progress monitor). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Novas' call progress monitor with the filtered frame decision block of Lai for the purpose of improving noise immunity of the call progress detector.

Claim 30 is limited in part to **an apparatus as defined in claim 29**, as covered by Novas in view of Lai. The applicant claims a median filter that counts the number of ones in a buffer. If the number of elements in the buffer representing the number one are in the majority of the total number of elements the current sample is a one, otherwise the current sample is a zero. Lai teaches a majority voting filter (i.e. **non-linear filtration unit**) that compares the current input sample from a frame decision block to a number of previous input samples, and whichever value of the input samples represents the majority of previous input samples determines the state of the current output sample that is applied to the cadence detector (i.e. **is operational to apply a median filtering operation to said successive classification elements**) (column 5, lines 31-60). Therefore, Novas in view of Lai makes obvious all limitations of the claim.

Claim 32 is essentially the same as claim 29 and is rejected for the same reasons.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter F Briney III whose telephone number is 703-305-0347. The examiner can normally be reached on M-F 8am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester W Isen can be reached on 703-305-4386. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Art Unit: 2644

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.

WFB
12/12/03


XU MEI
PRIMARY EXAMINER